REMARKS/ARGUMENTS

This Amendment is in response to the Final Office Action mailed November 1, 2006. Claims 1, 3-16, and 18-33 were pending in the present application. This Amendment amends claims 1, 15, and 29, and cancels claim 4, leaving pending in the application claims 1, 3, 5-16, and 18-33. Reconsideration of the rejected claims is respectfully requested.

I. Rejection under §101

Claims 1, 3-16, and 18-33 are rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. In particular, these claims are rejected are broadly including merely software that produces no tangible result. Although Applicants do not agree with the rejections, these claims have been amended to recite that the simulations occur in a hardware environment and can be used to validate a design of the combination hardware/software system. As such, it is respectfully submitted that these claims recite statutory subject matter. Applicants therefore respectfully request that the §101 rejections with respect to these claims be withdrawn

II. Rejection under 35 U.S.C. §112

Claims 15-28 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the term "having no knowledge" is rejected as being vague and indefinite. Although it is believed that such term is clear and unambiguous, the term has been removed from the claims in order to advance prosecution. Applicants therefore respectfully request that the §112 rejections with respect to these claims be withdrawn.

IV. Rejection under 35 U.S.C. §102

Claims 1-12, 14-26, and 28-33 are rejected under 35 U.S.C. §102(b) as being anticipated by *Lin* (US 6,389,379). Applicants respectfully submit that *Lin* does not disclose each element of these claims.

For example, Applicants' claim 1 as amended recites a method in a hardware environment for validating a design for a system which comprises a software element, and first and second hardware components, the software element being for execution on the second hardware component, and the first and second hardware components being operable to interact with one another, the method comprising the steps of:

> **simulating operation of the first hardware component in a first simulation in a hardware environment;**
> **simulating the software element and the second hardware component in a second simulation using a software model embedded within the hardware environment;** and
> analyzing the first and second simulations to validate the design for the system,
> wherein **the first simulation and the second simulation are implemented in separate processing threads within the hardware environment,** and
> wherein the **first and second simulation run asynchronously with the second simulation running ahead of the first simulation, allowing the software model to control the first simulation of the first hardware component** and allowing for more rapid simulation of software instructions **in the software model**

(*emphasis added*). Such limitations are not disclosed by *Lin*.

Lin discloses a co-verification system including a reconfigurable computing system and reconfigurable hardware array (col. 7, lines 61-67), which allow a user to turn designs into hardware and software representations for simulation (col. 8, lines 1-4). While a simulation is typically either software or hardware, the hardware simulation can be accelerated using the software model and the software simulation can be accelerated using the hardware model (col. 8, lines 4-44). The co-verification compiler partitions a user design into "control and evaluation components," then maps the control components to software and the evaluation components into hardware and software (col. 28, lines 5-13). The user then can run the software simulation and hardware emulations concurrently, can switch between modes, and can stop either process at any time to inspect values for each component (col. 28, lines 34-45).

Applicants' claim 1 as amended, however, recites that the software model for the software simulation is embedded in the hardware environment and runs ahead of the hardware simulation. Further, the software model is recited to control the hardware simulation. *Lin* does not disclose such limitations. The office action states on page 2, for example, that FIG. 17 and the associated description shows asynchronous simulation. It is respectfully submitted, however, that FIG. 17

shows asynchronous load control for the hardware model (col. 56, lines 37-47), and does not teach or suggest a software simulation running ahead of a hardware simulation and the software model controlling the hardware simulation. As *Lin* does not disclose or suggest at least these limitations, *Lin* cannot anticipate or render obvious Applicants' claim 1 as amended. The other claims recite limitations that similarly are not disclosed or suggested by *Lin* for reasons including those discussed above, such that these claims also cannot be anticipated or rendered obvious by *Lin*. Applicants therefore respectfully request that the §102 rejections with respect to these claims be withdrawn.

V. Rejection under 35 U.S.C. §103

Claims 13 and 27 are rejected under 35 U.S.C. §103(a) as being obvious over *Lin* in view of *Kim* ("An integrated Hardware-Software Cosimulation Environment with Automated Interface Generation"). Claim 13 depends from claim 1, and claim 27 depends from claim 15, which are not rendered obvious by *Lin* as discussed above. *Kim* does not make up for the deficiencies in *Lin* with respect to these claims. *Kim* teaches a co-simulation environment (Abstract; Introduction) and is cited as teaching use of a C model to implement a second simulation (OA p. 11). *Kim* does not, however, teach or suggest a software model embedded in a hardware environment and a software simulation running ahead of a hardware simulation, wherein the software model controls the hardware simulation. As such, *Kim* cannot render obvious Applicants' claims 1 or 15, or dependent claims 13 and 27, either alone or in combination with *Lin*. Applicants therefore respectfully request that the §103 rejections with respect to claims 13 and 27 be withdrawn.

VI. Amendment to the Claims

Unless otherwise specified or addressed in the remarks section, amendments to the claims are made for purposes of clarity, and are not intended to alter the scope of the claims or limit any equivalents thereof. The amendments are supported by the specification and do not add new matter.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 925-472-5000.

Respectfully submitted,

Jasdn D. Lohr
Reg. No. 48,163

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, Eighth Floor
San Francisco, California 94111-3834
Tel: 925-472-5000
Fax: 415-576-0300
Attachments
JDL:slh
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